

Department of Education Region III

DIVISION OF CITY SCHOOLS

Angeles City Jesus Street, Pulungbulu, Angeles City



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DIVISION MEMORANDUM

April 3, 2019

DIVISION MEMORANDUM No. 2019

SEMINAR ON NUCLEAR SCIENCE FOR TEACHERS

To Heads of Public Elementary and Secondary Schools

DepED Angeles City Division of City Schools By.

- Please be informed that the Nuclear Testing Center (NTC) of the Philippine Nuclear Research Institute (PNRI) will hold the Seminar on Nuclear Science for Teachers (SNST) from April 22 - May 17, 2019. The lectures will be conducted within the premises of the PNRI in Diliman, Quezon City.
- Qualified teachers are encouraged to participate in the course.
- Attached is a letter from Carlo A. Arcilla, Ph.D., Director, Department of Science and Technology, 3. for your reference and information.
- Wide dissemination of this Memorandum is desired. 4.

LEILANI SAMSON-CUNANAN, CESO VI Schools Division Superintendent W

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"SMILES BRIGHT, SERVES RIGHT"



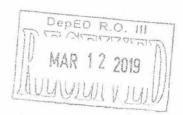
Republic of the Philippines Department of Science and Technology



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PHILIPPINE NUCLEAR RESEARCH INSTITUTE

12 February 2019



Subject:

Invitation to participate in the Seminar on Nuclear Science for Teachers, April 22 – May 17, 2019.

Sir/Madam:

The Nuclear Training Center (NTC) of the Philippine Nuclear Research Institute (PNRI) will hold the Seminar on Nuclear Science for Teachers (SNST) from 22 April - 17 May 2019. The lectures will be conducted within the premises of the PNRI in Diliman, Quezon City.

In this connection, we would like to invite your qualified staff to participate in the abovementioned course. Please find the enclosed Application Form and Information Bulletin containing the details of the course.

Interested participants should submit the requirements of the course not later than Monday, 1 April 2019 to:

Nuclear Training Center
Philippine Nuclear Research Institute
Commonwealth Avenue, Diliman, Quezon City
Tel. No.: 9296011-19 local 236
Email: ntc@pnri.dost.gov.ph

Very truly yours,

CARLO A. ARCILLA, Ph.D.

Director



Address: Commonwealth Avenue, Diliman, Quezon City

APPLICATION FOR TRAINING COURSE



NUCLEAR TRAINING CENTER
PHILIPPINE NUCLEAR RESEARCH INSTITUTE
Commonwealth Avenue, Diliman, Quezon City
Telephone No.: 929-60-11 to 19 local 236

E-mail: ntc@pnri.dost.gov.ph

Telefax: 920-87-88

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Republic of the Philippines Department of Science and Technology PHILIPPINE NUCLEAR RESEARCH INSTITUTE

Commonwealth Avenue, Diliman, Quezon City 1101 Philippines P.O. Box Nos. 213 UP Quezon City, 932 Manifa, 1314 Central O Tel. Nos. (632) 929-6011 to 19 Telefax (632) 9208788

NUCLEAR TRAINING CENTER Course information Bulletin

Course Title

Seminar on Nuclear Science for Teachers (SNST)

Former: Seminar on Nuclear Science for High School Science Teachers (SNSHSST)

Schedule/ **Duration**

20 days (160 hours)

Participation.

For high school science, mathematics, physics, biology and chemistry teachers who are holders of a bachelor's degree in education, science and engineering

A minimum of ten (10) participants is required to push through with the course. A maximum of thirty (30)

Pre-requisite: Course Goal:

A background on algebra, trigonometry, introductory calculus, general biology, chemistry and physics subjects To provide science teachers with sufficient knowledge of the fundamentals of nuclear science and its beneficial application in different fields. Enable participants to contribute to the high school science curriculum by introducing suitable nuclear science topics and experiments in teaching physics, chemistry and biology. At the end of this course, participants are expected to

Course Objectives.

Describe the atomic nucleus and explain the nature of radioactivity

Differentiate types of ionizing radiation and how they interact with matter 3

Be familiar with the different sources of ionizing radiation

Be familiar with the safety and security issues associated with the use of radioactive materials.

Explain the importance of regulating the use of radioactive materials.

Be acquainted with the application of radioisotopes in agriculture, medicine, industry and research studies.

Understand the basic principles behind the operation of a nuclear power plant.

Nature and Scope of the Course:

This course will consist of lectures, exercises, a workshop and examinations. The staff of the Nuclear Training Center (NTC), PNRI lecturers and guest lecturers will conduct the course The participant's performance in the seminar will be evaluated through the following:

Examinations (55%)

Development and presentation of teaching module incorporating nuclear science topics (30%)

Practical exercises (10%)

Attendance (5%)

A certificate of satisfactory completion will be issued to each participant who demonstrates satisfactory knowledge and skills of the subject matter presented.

Requirements:

(1) Application form with medical certificate; (2) Recommendation letter from principal or division superintendent;

Course Content:

Basic Nuclear Physics

Nuclear Reactions

Radioactivity and Radiation

Quantities and Units in Radiation Protection Exercise on Nuclide Chart and Nuclear Data

Interaction of Radiation with Matter

Radiation Detection and Measuring Instruments

Experiment on Radiation Detection Using an Improvised Cloud Chamber

Biological Effects of Ionizing Radiation

Basic Radiation Chemistry Basic Radiation Chemistry

Experiment on Characteristics of Geiger-Muller Detectors

Basic Principles of Radiation Protection

The PNRI Regulatory Function

Statistics of Counting

Experiment on Statistics of Counting

Concept of a Teaching Module

Radiation Control and Handling Practices

Radiation Shielding

Experiment on Absorption of Gamma Radiation

Security of Radiation Sources

Safe and Secure Transport of Radioactive Materials

Radiation Monitoring

Exercise: Radiological Survey of a Radiation Facility

Radioactive Waste Management Practices

Emergency Planning, Preparedness, Procedures and Response Exercise on Emergency Drill

Radioisotopes in Agriculture

Experiment: Radiosensitivity of Planting Materials

Food Irradiation

Experiment on Fruit Irradiation Radioisotopes in Geological Studies

Radioisotopes in Medicine



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NUCLEAR TRAINING CENTER Course information Bulletin

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Seminar on Nuclear Science for Teachers (SNST)

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Pre-requisite:

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Course

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Be familiar with the safety and security issues associated with the use of radioactive materials

Explain the importance of regulating the use of radioactive materials

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Course Content

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